Zhou (Joe) Lan[1]

CONTACT INFORMATION

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RESEARCH INTERESTS

Bayesian Methods and Computing, Spatial Statistics, Matrix-Variate Analysis, High-Dimensional Data Analysis, High Performance Computing

APPLICATION AREAS

Radiology, Neuroimaging, Diffusion Tensor Imaging, Magnetic Resonance Spectroscopy

APPOINTMENTS

Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts
Investigator; Instructor in Medicine **Oct, 2022 - present**

Yale Medical School , New Haven, Connecticut
Statistician **July, 2020 - Sep, 2022**

Department of Statistics, Pennsylvania State University, State College, Pennsylvania
Bruce Lindsay Visiting Assistant Professor **August, 2019 - July, 2020**

Global Statistical Sciences, Eli Lilly and Company, Indianapolis, Indiana
Ph.D. Statistics Intern **May, 2018 - August, 2018**

Ventana Medical Systems, Inc., part of Roche Tissues Diagnostics, Mountain View, California
Imaging Scientist Intern **May, 2016 - July, 2016**

EDUCATION

North Carolina State University, Raleigh, North Carolina

Ph.D. in Statistics, July 2019

- Dissertation Topic: *Spatial Modeling of Positive Definite Matrices and Its Applications to Diffusion Tensor Imaging*
  - Thesis Advisor: Brian J Reich
  - Committee Members: Ana-Maria Staicu, Ryan Martin, Luo Xiao
- Paige Plagge Award Laureate: Given for good citizenship to *"a graduate student with an outstanding academic record, who in the judgment of the committee has especially enhanced the life of fellow students with encouragement, generosity and/or humor."*

Georgia Institute of Technology, Atlanta, Georgia

M.S., Statistics (Mathematics), May 2015

Zhejiang University, Hangzhou, China

B.S., Biology, May 2012

[1] Updated on June 13, 2025

Honors and Awards

- **National Awards**
  - 2019 Winner of ICSA 2019 Applied Statistics Symposium Student Paper Competition
  - 2019 Winner of ASA Mental Health Statistics Student Paper Competition (Accept)
  - 2019 Winner of ASA Statistics in Imaging Student Paper Competition (Not accept due to the ASA one section award policy)
  - 2017 Joint Statistical Meetings Statistical Significance Poster Competition Winners
- **University Awards**
  - 2019 Winner of North Carolina State University Paige Plagge Award
  - 2018 North Carolina State University Mentoring for Diversity Retention Fellowship
  - 2011 Pohang University of Science and Technology (POSTECH) Research Scholarship
  - 2008-2012 Zhejiang University Outstanding Students Awards

Peer-Reviewed Publications

Full list on Complete List of Published Work in MyBibliography
https://www.ncbi.nlm.nih.gov/myncbi/zhou.lan.1/bibliography/public/

- **Informatics/Computational/Statistical Methodology**

Zhou Lan, Arkaprava Roy, "Spatial von-Mises Fisher Regression for Directional Data", *Technometrics* **Accepted**, (2025+).
(doi.org/10.1080/00401706.2025.2519303)

Zhou Lan, Yuqian Chen, Jarrett Rushmore, Leo Zekelman, Nikos Makris, Yogesh Rathi, Alexandra J. Golby, Fan Zhang, and Lauren J. O'Donnell, "Fiber Microstructure Quantile (FMQ) Regression: A Novel Statistical Approach for Analyzing White Matter Bundles from Periphery to Core", *Imaging Neuroscience* **3**, imag_a_00569 (2025).
(doi.org/10.1162/imag_a_00569)

Zhou Lan, Sheryl Foster, Molly Charney, Max van Grinsven, Katherine Breedlove, Kasia Kozlowska, Alexander Lin, "Neurometabolic Network (NMetNet) for Functional Neurological Disorder in Children and Adolescents", *NeuroImage: Clinical* **46**, (2025).
(doi.org/10.1016/j.nicl.2025.103767)

Arkaprava Roy, Zhou Lan , "Double Soft-Thresholded Model for Multi-Group Scalar on Vector-Valued Image Regression", *Bayesian Anal.* **Advance Publication**, (2025).
(doi.org/10.1214/24-BA1483)

Lei Yan, Xin Zhang, Zhou Lan, Dipankar Bandyopadhyay, and Yichao Wu, "Variable Screening and Spatial Smoothing in Frechet Regression with Application to Diffusion Tensor Imaging", *Ann. Appl. Stat.* **19**, 1 (2025).
(DOI: doi.org/10.1214/24-AOAS1978)

Beroukhim B, McComas S, Joyce JM, Schuhmacher LS, Koerte I, Lan Z, Lin A, "A novel automated pipeline to assess MR spectroscopy quality control: Comparing current standards and manual assessment.", *J Neuroimaging* **35**, 1 (2025).
(DOI: doi.org/10.1080/26941899.2024.2412017)

Roy Arkaprava, Zhou Lan, and Zhengwu Zhang, "Nonparametric Modeling of Diffusion MRI Signal in Q-Space", *Data Science in Science* **6**, 4 (2024).
(DOI: doi.org/10.1080/26941899.2024.2412017)

Zhou Lan, Alexander Turchin, "Impact of Possible Errors in NLP-Derived Data on Downstream Epidemiologic Analysis", *JAMIA Open* **6**, 4 (2023).
(DOI: 10.1093/jamiaopen/ooad111)

Zhou Lan, Le Bao, "Multivariate Spatial Modeling for Predicting Missing HIV Prevalence Rates Among Key Populations", *Journal of the Royal Statistical Society Series A (Statistics in Society)* **187**, 2 (2024). (DOI: 10.1093/jrsssa/qnad113)

Zhou Lan, "Correlated Wishart Matrices Classification via an Expectation-Maximization Composite Likelihood-Based Algorithm", *Statistics and Its Interface* **17**, 2 (2024). (DOI: 10.4310/22-SII770)

Zhou Lan, Brian J Reich, Joseph Guinness, Dipankar Bandyopadhyay, Liangsuo Ma, and F Gerard Moeller, "Geostatistical Modeling of Positive Definite Matrices and Its Applications to Diffusion Tensor Imaging", *Biometrics* **78**, 2 (2022). (This paper has won 2017 Joint Statistical Meetings (JSM) Statistical Significance Poster Competition Winners and 2019 Winner of ICSA 2019 Applied Statistics Symposium Student Paper Competition)
(DOI: 10.1111/biom.13445)

Zhou Lan, Brian J Reich, and Dipankar Bandyopadhyay, "Probabilistic Diffusion MRI Fiber Tracking Using Directed Acyclic Graph Auto-Regression for Positive Definite Matrices", *Journal of Statistical Research* **55**, 1 (2021).
(DOI: 10.47302/jsr.2021550110)

Zhou Lan, Brian J Reich, and Dipankar Bandyopadhyay, "A spatial Bayesian semiparametric mixture model of positive defnite matrices for diffusion tensor imaging", *Canadian Journal of Statistics* **49**, 1 (2021). (This paper has won 2019 ASA Student Paper Competition of **both** Mental Health Statistics and Statistics in Imaging)
(DOI: 10.1002/cjs.11601)

Zhou Lan, Yize Zhao, Jian Kang, Tianwei Yu, "Bayesian network feature finder (BANFF): an R package for gene network feature selection", *Bioinformatics* **32**, 23 (2016).
(DOI: 10.1093/bioinformatics/btw522)

- **Clinical/Scientific Collabrations**

Grobman, Benjamin, Liyun He, Zhou Lan, Abdelrahman Nimeri, Caroline Apovian, and Alexander Turchin, "Race and Sex Disparities in Metabolic/Bariatric Surgery over 20 Years: A Cohort Study", *Annals of Surgery Open* **6**, 1 (2025+).
(doi: 10.1097/AS9.0000000000000540)

Tyler A Lanman, Gilbert Youssef, Raymond Huang, Rifaquat Rahman, Matthew DeSalvo, Thomas Flood, Elmira Hassanzadeh, Min Lang, Jason Lauer, Christopher Potter, Albert Jiao, Ian Pan, Daniel P Cahill, Zhou Lan, Juan Pablo Ospina, Vihang Nakhate, Natalie E Stec, Diana Shi, Wenya Linda Bi, Samuel K McBrayer, Isabel Arrillaga-Romany, Eudocia Q Lee, Ugonma N Chukwueke, Lakshmi Nayak, Deborah A Forst, Elizabeth R Gerstner, Justin T Jordan, Jorg Dietrich, Julie Miller, Tracy T Batchelor, David A Reardon, Patrick Y Wen, L Nicolas Gonzalez Castro, "Ivosidenib for the Treatment of IDH1-mutant Glioma, Grades 2 to 4: Tolerability, Predictors of Response, and Outcomes", *Neuro-Oncology Advances* **7**, 1 (2025).
(doi: https://doi.org/10.1093/noajnl/vdae227)

Hassanzadeh, Elmira, Alyssa Ailion, Masoud Hassanzadeh, Alena Hornak, Noam Peled, Dana Martino, Simon K. Warfield, Zhou Lan, Taha Gholipour, and Steven M. Stufflebeam, "Imaging and Anesthesia Protocol Optimization in Sedated Clinical Resting-State fMRI", *American Journal of Neuroradiology* **49**, 5 (2025+).
(doi: https://doi.org/10.3174/ajnr.A8438)

Chai, Jessie L., Lauren A. Roller, Xiaoyang Liu, Zhou Lan, Matthew Mossanen, Stuart G. Silverman, and Atul B. Shinagare, "Performance of VI-RADS in predicting muscle-invasive bladder cancer after transurethral resection: a single center retrospective analysis", *Abdominal Radiology* **49**, 5 (2024).
(doi: https://doi.org/10.1007/s00261-024-04245-4)

Jirarayapong, J., Portnow, L.H., Chikarmane, S.A., Lan, Z. and Gombos, E.C, ""High Peritumoral and Intratumoral T2 Signal Intensity in HER2+ Breast Cancers on Preneoadjuvant Breast MRI: Assessment of Associations With Histopathologic Characteristics", *American Journal of Roentgenology* **222**, . (2024).
(doi: https://doi.org/10.2214/AJR.23.30280)

Allyson L. Chesebro, Nita Amornsiripanitch, Zhou Lan, Camden P. Bay, Sona A. Chikarmane, "Experience of a single healthcare system with screening mammography before and after COVID-19 shutdown", *Clinical Imaging* **101**, (2023).
(doi:10.1016/j.clinimag.2023.06.005)

Behnood Bikdeli, Candrika D Khairani, Darsiya Krishnathasan, Antoine Bejjani, Andre Armero, Anthony Tristani, Julia Davies, Nicole Porio, Ali A Assi, Victor Nauffal, Umberto Campia, Zaid Almarzooq, Eric Wei, Aditya Achanta, Sirus J Jesudasen, Bruce C Tiu, Geno J Merli, Orly Leiva, John Fanikos, Aditya Sharma, Alec Vishnevsky, Judith Hsia, Mark R Nehler, James Welker, Marc P Bonaca, Brett J Carroll, Zhou Lan, Samuel Z Goldhaber, Gregory Piazza; CORONA-VTE-Network Investigators, "Major cardiovascular events after COVID-19, event rates post-vaccination, antiviral or anti-inflammatory therapy, and temporal trends: Rationale and methodology of the CORONA-VTE-Network study", *Thrombosis Research* **228**, (2023).
(doi:10.1016/j.thromres.2023.05.019)

Ezra A. Burch, Sharath K. Bhagavatula, Fiona E. Malone, Ryan R. Reichert, Kemal Tuncali, Vincent M. Levesque, Zhou Lan, William T. Sticka, Paul B. Shyn, "Tumor and ablation margin visibility during cryoablation of musculoskeletal tumors: comparing intraprocedural PET/CT versus CT-only images", *Journal of Vascular and Interventional Radiology* **34**, 8 (2023).
(doi:10.1016/j.jvir.2023.03.034)

C. Justin Brown, PharmD; Lee-Shing Chang, MD; Naoshi Hosomura, DDS, DMSc, MBA; Shervin Malmasi, PhD; Fritha Morrison, PhD; Maria Shubina, ScD; Zhou Lan, PhD; Alexander Turchin, MD, MS , "Assessment of Sex Disparities in Nonacceptance of Statin Therapy and Low-Density Lipoprotein Cholesterol Levels Among Patients at High Cardiovascular Risk", *JAMA Network Open* **6**, 2 (2023).
(doi:10.1001/jamanetworkopen.2023.1047)

Philip W Chui, Zhou Lan, James V Freeman, Alan D Enriquez, Rohan Khera, Joseph G Akar, Fred A Masoudi, Emily L Ong, Jeptha P Curtis, "Variation in hospital use of cardiac resynchronization therapy-defibrillator among eligible patients and association with clinical

outcomes", *Heart Rhythm* **20**, 7 (2023).
(DOI: 10.1016/j.hrthm.2023.03.022)

Borne, Ryan T., Paul Varosy, Zhou Lan, Frederick A. Masoudi, Jeptha P. Curtis, Daniel D. Matlock, and Pamela N. Peterson, "Trends in Use of Single-vs Dual-Chamber Implantable Cardioverter-Defibrillators Among Patients Without a Pacing Indication, 2010-2018", *JAMA Network Open* **5**, 3 (2022).
(DOI:10.1001/jamanetworkopen.2022.3429)

Hai-Tao Mao, Da-Hui Wang, Zhou Lan, Hong Zhou, Wan-Xi Yang, "Gene expression profiles of prohibitin in testes of Octopus tankahkeei (ot-phb) revealing its possible role during spermiogenesis", *Molecular biology reports* **39**, 5 (2012).
(DOI: 10.1007/s11033-011-1355-4)

Zhou Lan and Wan-Xi Yang, "Nanoparticles and spermatogenesis: how do nanoparticles affect spermatogenesis and penetrate the bloodtestis barrier", *Nanomedicine* **7**, 4 (2012).
(DOI: 10.2217/nnm.12.20.)

Patents

Chukka Srinivas, Zhou Lan, "System and Method for Color Deconvolution of a Slide Image to Assist in the Analysis of Tissue", , US20200167965A1 (Priority Date: 2017/08/04; Publication Date: 5/28/2020).

Presentations

Ferenc Jolesz First Monday Research Seminars, Boston, MA 2023

ICSA 2022 Applied Statistics Symposium, Gainesville, FL 2022

ICSA 2019 Applied Statistics Symposium, Raleigh, NC 2019

Joint Statistical Meetings, Denver, CO 2019

Joint Statistical Meetings, Vancouver, BC Canada 2018

Professional Affiliations and Services

Member, American Statistical Association

Member, International Biometrics Society

Member, International Chinese Statistical Association

Referee for *Statistics in Medicine* , *Journal of the American Statistical Association* , *PLoS ONE* , *The Annals of Applied Statistics* , *Biometrics*, *Statistics in Biosciences* , *Nature Cardiovascular Research*

Teaching

At Department of Radiology, Brigham and Women's Hospital

Spring 2025:
Biostatistics Training for Radiologists

At The Penn State University

Spring 2020:
STAT 415 Introduction of Mathematical Statistics

Fall 2019:
STAT 503 Design of Experiments

Academic Service

Junior Faculty Population Science Research representative on the Brigham Research Institute Research Oversight Committee (BRI ROC)